

WHAT IS CLAIMED IS:

1. A cannula for connecting an organ to a fluid flow system,
comprising:
 - a first portion and a second portion, wherein a chamber formed when the first and second portions are brought together;
 - a first fitting on one of the top and bottom portions, the first fitting in fluid communication with the chamber;
 - wherein the second portion has a hole in fluid communication with the chamber and adapted to receive a section of tissue and at least one sealing surface adapted to secure the section of tissue when the first and second portions are brought together.
2. The cannula of claim 1, wherein fluid flow through the first fitting is substantially perpendicular to fluid flow through the hole.
3. The cannula of claim 1, wherein at least a portion of at least one of the first and second portions that forms part of the chamber is one of a transparent material and a translucent material.
4. The cannula of claim 1, wherein the chamber is designed to collect gas separate from a fluid flow through the first fitting, the chamber and the hole.
5. The cannula of claim 1, further comprising a second fitting formed on one of the first and second portions, the second fitting in fluid communication with the chamber that is formed when the first and second portions are brought together.
6. The cannula of claim 5, wherein fluid flow through the second fitting is substantially perpendicular to fluid flow through the hole.
7. The cannula of claim 5, wherein the second fitting comprises at least one of a vent and a valve.
8. The cannula of claim 5, wherein the second fitting is adapted to connect to a first fitting of a second cannula.
9. The cannula of claim 1, further comprising:
 - at least one fixing member on one of the first and second portions;
 - and
 - at least one compression strap arranged to wrap around at least part of the first portion and at least part of the second portion and to engage the fixing member so that the first and second portions are brought together.

10. The cannula of claim 9, further comprising a sealing ring disposed between the first and second portions, the compression strap extending from the sealing ring.

11. The cannula of claim 9, further comprising:
at least one engagement member on one of the first and second portions; and
a complementary engagement member at a free end of the compression strap;
wherein the engagement member is arranged to engage the complementary engagement member while the compression strap is wrapped around at least part of the first portion and at least part of the second portion and engages the fixing member so that the first and second portions are brought together.

12. The cannula of claim 1, further comprising:
a pre-positioning structure formed on the first portion;
a complementary pre-positioning structure formed on the second portion, the pre-positioning structure and the complementary pre-positioning structure arranged to engage each other while permitting relative movement of the first and second portions.

13. The cannula of claim 12, wherein the relative movement permitted by the engagement of the pre-positioning structure and the complementary pre-positioning structure allows the first portion and the second portion to be positioned relative to each other such that a first sealing surface on the first portion is substantially parallel to a second sealing surface on the second portion and allows the first and second portions to be brought together, while maintaining the first sealing surface substantially parallel to the second sealing surface, to secure the section of tissue.

14. The cannula of claim 13, wherein the relative movement permitted by the engagement of the pre-positioning structure and the complementary pre-positioning structure comprises a pivoting movement that allows the first portion and the second portion to be positioned relative to each other such that the first sealing surface is substantially parallel to the second sealing surface.

15. The cannula of claim 13, wherein the relative movement permitted by the engagement of the pre-positioning structure and the complementary pre-positioning structure comprises a linear movement that allows the first and second

portions to be brought together, while maintaining the first sealing surface substantially parallel to the second sealing surface.

16. The cannula of claim 13, wherein the relative movement permitted by the engagement of the pre-positioning structure and the complementary pre-positioning structure comprises a pivoting movement that allows the first portion and the second portion to be positioned relative to each other such that the first sealing surface is substantially parallel to the second sealing surface and a linear movement that allows the first and second portions to be brought together, while maintaining the first sealing surface substantially parallel to the second sealing surface.

17. The cannula of claim 1, wherein a flange extends from an outer surface of the second portion.

18. The cannula of claim 1, further comprising:
at least one sealing ring disposed between the top and bottom portions.

19. The cannula of claim 18, wherein the sealing ring comprises an elastomeric material.

20. The cannula of claim 18, wherein the first portion has a first sealing surface, the second portion has a second sealing surface, and the sealing ring has a shape complementary to a shape of at least one of the first and second sealing surfaces.

21. The cannula of claim 20, wherein at least one of the first and second sealing surfaces comprises at least one of ribs, ridges, cuts and protrusions and the sealing ring comprises a plurality of complementary details corresponding to the at least one of ribs, ridges, cuts and protrusions.

22. The cannula of claim 1, wherein the first portion has a first sealing surface, the second portion has a second sealing surface, and at least one of the first and second sealing surfaces comprises an elastomeric material.

23. The cannula of claim 22, wherein at least one of the first and second sealing surfaces comprises at least one of ribs, ridges, cuts and protrusions.

24. A cannula for connecting an organ to a fluid flow system, comprising:

a first portion having a first sealing surface;

a first fitting on the first portion, the first fitting in fluid communication with a hole that is formed in the first sealing surface; and

a second portion having at least one pair of opposing flexible arms arranged to engage the first portion, the second portion having a hole adapted to receive a section of tissue, the first and second portions adapted to secure the section of tissue when the first and second portions are brought together.

25. The cannula of claim 24, wherein fluid flow through the first fitting is substantially perpendicular to fluid flow through the hole.

26. The cannula of claim 24, wherein at least a portion of the first portion is one of a transparent material and a translucent material.

27. The cannula of claim 24, further comprising a second fitting on the first portion, the second fitting in fluid communication with at least one of the first fitting and the hole formed in the first sealing surface.

28. The cannula of claim 27, wherein fluid flow through the second fitting is substantially perpendicular to fluid flow through the hole.

29. The cannula of claim 27, wherein the second fitting comprises at least one of a vent and a valve.

30. The cannula of claim 27, wherein the second fitting is adapted to connect to a first fitting of a second cannula.

31. The cannula of claim 24, wherein the first sealing surface comprises an elastomeric material.

32. The cannula of claim 24, wherein the pair of opposing flexible arms is arranged to wrap around at least a part of the first portion and to engage at least one fixing member on the first portion so that the first and second portions are brought together.

33. The cannula of claim 32, wherein the pair of opposing flexible arms comprises an elastomeric material.

34. The cannula of claim 24, wherein the second portion comprises a one-piece flexible part.

35. The cannula of claim 34, wherein the second portion comprises an elastomeric material.

36. A cannula for connecting an organ to a fluid flow system, comprising:

a cannula body having a first fitting;

a portion extending from the cannula body that defines a lumen that is in fluid communication with the first fitting; and

a second fitting on the cannula body, the second fitting in fluid communication with at least one of the first fitting and the lumen.

37. The cannula of claim 36, wherein fluid flow through at least the first fitting is substantially perpendicular to fluid flow through the lumen.

38. The cannula of claim 36, wherein the second fitting comprises at least one of a vent and a valve.

39. The cannula of claim 36, wherein the second fitting is adapted to connect to a first fitting of a second cannula.

40. The cannula of claim 36, wherein at least a portion of the cannula body is one of a transparent material and a translucent material.

41. The cannula of claim 36, further comprising:
a flange formed on the portion extending from the cannula body.

42. The cannula of claim 36, further comprising:
a securing feature on the portion extending from the cannula body.

43. The cannula of claim 42, wherein the securing feature comprises at least one of a groove and a ridge.

44. The cannula of claim 36, wherein the portion extending from the cannula body comprises an elastomeric material.

45. A cannula mount assembly, comprising:
a cannula having at least one fitting that provides fluid communication with one of a hole and a lumen;
a cannula mount adapted to support the cannula;
at least one connection arm on one of the cannula and the cannula mount; and

at least one arm holder on the other of the cannula and the cannula mount, the arm holder adapted to removably engage the connection arm.

46. The cannula of claim 45, wherein fluid flow through the at least one fitting is substantially perpendicular to fluid flow through the one of a hole and a lumen.

47. The assembly of claim 45, wherein the arm holder comprises a substantially "U" or "C" shaped portion.

48. The assembly of claim 45, wherein the cannula comprises a first portion and a second portion, one of the connection arm and the arm holder being formed on one of the first and second portions.

49. The assembly of claim 48, wherein one of the first and second portions comprises the cannula mount.

50. The assembly of claim 45, wherein the cannula mount has an attachment feature adapted to engage a separate support structure.

51. The assembly of claim 50, wherein the attachment feature comprises an open slot.

52. The assembly of claim 51, wherein at least one side of the open slot comprises a resilient wall.

53. The assembly of claim 50, wherein the attachment feature comprises at least one of a clip, a clamp and a snap.

54. The assembly of claim 50, wherein the cannula mount comprises a body portion that defines the attachment feature, the connection arm or the arm holder on the cannula mount extending from the body portion.

55. The assembly of claim 45, further comprising:
at least one protrusion on one of the cannula and the cannula mount;
and
at least one complementary recess on the other of the cannula and the cannula mount;
wherein the complementary recess engages the protrusion when the arm holder engages the connection arm, the engagement of the recess and the protrusion restricting the rotation of the connection arm relative to the arm holder.

56. The assembly of claim 55, wherein the at least one complementary recess comprises a plurality of complementary recesses.

57. The assembly of claim 45, further comprising:
a platform having a base adapted to support an organ and a mounting portion adapted to engage the cannula mount so that the cannula is supported relative to the platform.

58. The assembly of claim 57, wherein the cannula mount is movable relative to the mounting portion to adjust a position of the cannula relative to the platform.

59. The assembly of claim 57, wherein the mounting portion is movable relative to the platform to adjust a position of the cannula relative to the platform.

60. The assembly of claim 57, wherein the cannula mount has an attachment feature adapted to engage the mounting portion of the platform.

61. The assembly of claim 60, wherein the attachment feature comprises an open slot and the mounting portion comprises an extension that fits through the open slot.

62. The assembly of claim 61, wherein movement of the extension through the open slot adjusts a position of the cannula relative to the base of the platform.

63. The assembly of claim 61, wherein at least one side of the open slot comprises a resilient wall that flexes when the extension fits through the open slot.

64. The assembly of claim 61, wherein the resilient wall has a pair of substantially parallel extensions and wherein the resilient wall flexes when pressure is applied to a portion of the extensions.

65. A method for connecting an organ to a fluid flow system, comprising:
 providing the cannula of claim 1; and
 securing a section of tissue of an organ between the first and second portions of the cannula.

66. The method of claim 65, further comprising:
 connecting the first fitting to a fluid flow system; and
 visually checking for gas in the cannula after connecting the first fitting to a fluid flow system.

67. The method of claim 65, further comprising:
 connecting the first fitting to a fluid flow system; and
 opening a second fitting, in communication with the chamber formed when the first and second portions are brought together, to allow gas in the cannula to be removed from a flow of liquid between the fluid flow system and the organ.

68. The method of claim 65, further comprising:
 connecting the first fitting to a fluid flow system; and
 connecting a second fitting of the cannula to a first fitting of another cannula to allow a flow of liquid between the fluid flow system and both cannulas.

69. The method of claim 65, further comprising:
 providing a cannula mount adapted to engage and support the cannula; and
 engaging the cannula with the cannula mount after securing the section of tissue.

70. The method according to claim 69, further comprising adjusting a position of the cannula relative to the cannula mount after engaging the cannula with the cannula mount.

71. The method of claim 70, wherein adjusting the position of the cannula comprises rotating the cannula relative to the cannula mount.

72. The method according to claim 69, further comprising:
providing a platform adapted to support the organ and to engage and support the cannula mount;
engaging the cannula mount with the platform after securing the section of tissue; and
placing the organ on the platform.

73. The method of claim 72, further comprising adjusting a position of the cannula mount relative to the platform after engaging the cannula mount with the platform.

74. The method of claim 73, wherein adjusting the position of the cannula mount comprises adjusting a distance of the cannula relative to a portion of the platform that supports the organ.

75. A method for connecting an organ to a fluid flow system, comprising:
providing the cannula of claim 23; and
securing a section of tissue of an organ between the first and second portions of the cannula.

76. The method of claim 75, further comprising:
connecting the first fitting to a fluid flow system; and
visually checking for gas in the cannula after connecting the first fitting to a fluid flow system.

77. The method of claim 75, further comprising:
connecting the first fitting to a fluid flow system; and
opening a second fitting on the first portion to allow gas in the cannula to be removed from a flow of liquid between the fluid flow system and the organ.

78. The method of claim 75, further comprising:
connecting the first fitting to a fluid flow system; and

connecting a second fitting of the cannula to a first fitting of another cannula to allow a flow of liquid between the fluid flow system and both cannulas.

79. The method of claim 75, further comprising:

providing a cannula mount adapted to engage and support the cannula; and

engaging the cannula with the cannula mount after securing the section of tissue.

80. The method according to claim 79, further comprising adjusting a position of the cannula relative to the cannula mount after engaging the cannula with the cannula mount.

81. The method of claim 80, wherein adjusting the position of the cannula comprises rotating the cannula relative to the cannula mount.

82. The method according to claim 79, further comprising:

providing a platform adapted to support the organ and to engage and support the cannula mount;

engaging the cannula mount with the platform after securing the section of tissue; and

placing the organ on the platform.

83. The method of claim 82, further comprising adjusting a position of the cannula mount relative to the platform after engaging the cannula mount with the platform.

84. The method of claim 83, wherein adjusting the position of the cannula mount comprises adjusting a distance of the cannula relative to a portion of the platform that supports the organ.

85. A method for connecting an organ to a fluid flow system, comprising:

providing the cannula of claim 35; and

securing a section of tissue of an organ to the portion that defines the lumen.

86. The method of claim 85, further comprising:

connecting the first fitting to a fluid flow system; and

visually checking for gas in the cannula after connecting the first fitting to a fluid flow system.

87. The method of claim 85, further comprising:

connecting the first fitting to a fluid flow system; and
opening the second fitting to allow gas in the cannula to be removed
from a flow of liquid between the fluid flow system and the organ.

88. The method of claim 85, further comprising:
connecting the first fitting to a fluid flow system; and
connecting the second fitting of the cannula to a first fitting of
another cannula to allow a flow of liquid between the fluid flow system and both
cannulas.

89. The method of claim 85, further comprising:
providing a cannula mount adapted to engage and support the
cannula; and
engaging the cannula with the cannula mount after securing the
section of tissue.

90. The method according to claim 89, further comprising adjusting a
position of the cannula relative to the cannula mount after engaging the cannula with
the cannula mount.

91. The method of claim 90, wherein adjusting the position of the
cannula comprises rotating the cannula relative to the cannula mount.

92. The method according to claim 89, further comprising:
providing a platform adapted to support the organ and to engage and
support the cannula mount;
engaging the cannula mount with the platform after securing the
section of tissue; and
placing the organ on the platform.

93. The method of claim 92, further comprising adjusting a position of
the cannula mount relative to the platform after engaging the cannula mount with the
platform.

94. The method of claim 93, wherein adjusting the position of the
cannula mount comprises adjusting a distance of the cannula relative to a portion of
the platform that supports the organ.

95. A method for connecting an organ to a fluid flow system,
comprising:

providing a cannula adapted to be connected to a tissue of an organ and adapted to provide a fluid flow to the organ when connected to the tissue of the organ;

securing the cannula to the tissue of the organ;

providing a cannula mount adapted to engage and support the cannula; and

engaging the cannula with the cannula mount after securing the cannula to the tissue of the organ.

96. The method according to claim 95, further comprising adjusting a position of the cannula relative to the cannula mount after engaging the cannula with the cannula mount.

97. The method of claim 96, wherein adjusting the position of the cannula comprises rotating the cannula relative to the cannula mount.

98. The method according to claim 95, further comprising:
providing a platform adapted to support the organ and to engage and support the cannula mount;

engaging the cannula mount with the platform after securing the cannula to the tissue of the organ; and

placing the organ on the platform.

99. The method of claim 98, further comprising adjusting a position of the cannula mount relative to the platform after engaging the cannula mount with the platform.

100. The method of claim 99, wherein adjusting the position of the cannula mount comprises adjusting a distance of the cannula relative to a portion of the platform that supports the organ.

101. A method for connecting an organ to a fluid flow system, comprising:

providing a cannula adapted to be connected to a tissue of an organ and adapted to provide a fluid flow to the organ when connected to the tissue of the organ;

positioning a first portion of the cannula and a second portion of the cannula relative to each other such that a first sealing surface on the first portion is substantially parallel to a second sealing surface on the second portion; and

bringing the first and second portions of the cannula together, while maintaining the first sealing surface substantially parallel to the second sealing surface, to secure the cannula to the tissue of the organ.

102. The method of claim 101, wherein positioning the first portion of the cannula and the second portion of the cannula relative to each other comprises rotating at least one of the first portion and the second portion.

103. The method of claim 101, wherein bringing the first and second portions of the cannula together comprises linearly moving at least one of the first portion and the second portion.